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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/808,666	03/14/2001	Robert A. Sutherland	9257	4907

7590 06/19/2003

Bruce H. Johnsonbaugh
Eckhoff, Hoppe, Slick, Mitchell & Anderson
Suite 3125
333 Market Street
San Francisco, CA 94105

EXAMINER

CALEY, MICHAEL H

ART UNIT

PAPER NUMBER

2871

DATE MAILED: 06/19/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/808,666	SUTHERLAND ET AL.	
	Examiner	Art Unit	
	Michael H. Caley	2882	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 6 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-28 and 31-33 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☐ Claim(s) ____ is/are rejected.
- 7) ☒ Claim(s) 26 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|---------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

Applicant's arguments filed March 28, 2003 have been fully considered but they are not persuasive.

Regarding the rejection of claims 1, 2, 13, and 20 as anticipated by Chun et al., Applicant states that the amended claim overcomes the rejection by limiting the conversion assembly to be fixedly mounted onto a substrate. The Examiner, however, holds that the flexible circuit board is a substrate given that it serves the functions of mounting the conversion device and that it provides an electrically insulating barrier, being constructed of a polymer (Column 1 lines 52-56).

Regarding the rejection of claims 1 and 13-15 as anticipated by Clayton, Applicant states that the amended claim overcomes the rejection by limiting the purpose of the flexible circuit to provide mechanical isolation of the conversion assembly from vibrations, stresses, and strains. The Examiner, however, holds that the flexible circuit disclosed by Clayton provides the same mechanical isolation property to the devices to which it is attached. Given that the circuit is flexible, it has an equal property of providing mechanical isolation when experiencing a force as when it is rigid. Clayton discloses the purpose of the flexible circuit as to provide mechanical isolation, such a property of the structure disclosed is inherent. The intended use or purpose of providing mechanical isolation only limits the claim to a material capable of providing such a function, such as the flexible circuit in the Clayton reference.

Regarding the rejection of claims 1 and 13 as anticipated by Galloway, Applicant states that the amended claim overcomes the rejection by limiting the conversion assembly to be

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fixedly mounted onto a substrate. The Examiner, however, holds that the flexible substrate is a substrate given that serves the functions of mounting the conversion device and that it provides an electrically insulating barrier (Column 3 lines 33-44).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(c) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 13, and 31 are rejected under 35 U.S.C. 102(e) as being anticipated by Han et al. (U.S. Patent No. 6,347,004 "Han")

Regarding claims 1 and 31, Han discloses an optical to electrical or electrical to optical conversion assembly having:

a non-flexible substrate having a surface onto which components of the conversion assembly are fixedly mounted (Figure 1 elements 15, 16, and 18);

a flexible circuit operatively and electrically attached to a connection location selected from the group consisting of the surface of the substrate and at least one component, in which the flexible circuit provides mechanical isolation to the components (Column 7 lines 9-15).

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Regarding claim 13, Han discloses the flexible circuit as electrically attached to at least one component to form an operation circuit, in which the operation circuit comprises means for achieving low loss transmission of an electrical signal propagating on the operation circuit (Column 7 lines 9-15).

Claims 1, 13, and 31 are rejected under 35 U.S.C. 102(b) as being anticipated by Meyer-Guldner et al. (U.S. Patent No. 6,014,476 "Meyer-Guldner").

a non-flexible substrate having a surface onto which components of the conversion assembly are fixedly mounted (Figure 1 element 1);

a flexible circuit operatively and electrically attached to a connection location selected from the group consisting of the surface of the substrate and at least one component, in which the flexible circuit provides mechanical isolation to the components (Column 4 lines 15-23, lines 47-53).

Regarding claim 13, Meyer-Guldner discloses the flexible circuit as electrically attached to at least one component to form an operation circuit, in which the operation circuit comprises means for achieving low loss transmission of an electrical signal propagating on the operation circuit (Column 4 lines 47-53).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 5-8, 12, 32, and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Han in view of Ueno et al. (U.S. Patent No. 5,184,399 "Ueno").

Regarding claims 5-8, 32, and 33, Han discloses all of the proposed limitations except for the surface as ceramic, having a low coefficient of thermal expansion, a conductivity rating of at least 25 W/m K, and as selected from the group consisting of BeO, AlN, or Al₂O₃. Ueno discloses a method of manufacturing a circuit board using an insulating substrate having a high thermal conductivity used for mounting semiconductor elements. Ueno teaches aluminum nitride as a desirable body for such an insulating substrate, which has a thermal conductivity of at least 170 W/m K (Column 4 lines 60-62). Such a substrate inherently has a low coefficient of thermal expansion.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used a ceramic material such as AlN in an electro-optic device such as referenced in Figure 1 element 16 of Han's substrate for the optoelectronic device. It is old and well known in the art that optical components such as lasers are highly heat sensitive and that

Therefore, it would have been advantageous to use a substrate as disclosed by Ueno, which could work to dissipate heat generated in Chun's device effectively. Such an improvement would create better heat dissipation within the semiconductor device, allowing for a more highly powered, faster device, or for the electrical and optical components to be placed within closer proximity of one another.

Regarding claim 12, Han and Ueno fail to disclose electrical connections between conversion assembly components and the flexible circuit with solder. However, the Examiner takes official notice that such a means of creating electrical connections between optoelectronic components and a circuit.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have made the connections between the conversion assembly and the flexible circuit with solder. Chun describes the connecting means between an optoelectronic device and the flexible circuit as electrical pads or sockets (Column 1 lines 56-58). Changing these connections to solder connections would have been advantageous to create permanent connections between the device and board using a cheap, quick, and reliable manner.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent No. 6,491,446 to Kryzak as an alternative embodiment of a nonflexible substrate for optoelectronic devices having a flexible circuit.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO**

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MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael H. Caley whose telephone number is (703) 305-7913. The examiner can normally be reached on M-F 8:30 a.m. - 5:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim can be reached on (703) 305-3492. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



PRIMARY EXAMINER



mhc
June 4, 2003